Project Model Canvas' Contributions to the Project-Based Learning Method

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Abstract

The present study has as its main objective to contribute to the Project-Based Learning (PBL) Method, in face-to-face and/or remote education, with the help of Project Model Canvas (PMC), a project management tool; as secondary objective, it intends to become acquainted with PMC, as one of the existing Project Management methods, and understand PBL's relevance for face-to-face or remote education. It is a qualitative review of literature; two digital platforms, Scientific Electronic Library Online (sciELO) and Google Scholar, were searched for papers in the field of Education that address PMC and PBL between 2013 to 2019. Results show that the integrating PMC into PBL would make project planning and management more collaborative and fluid, facilitating the delivery of the end product, thus promoting significant and integral learning of the subjects involved. At the end of the study, it is concluded that PBL may be better more efficiently implemented when combined with the PMC, a practical model for the creation and management of short, medium and long-term projects. The combined use of the two methodologies fosters the construction of meaningful, self-directed student knowledge, favoring the development of their cognitive and socio-emotional skills.

Keywords: Project Model Canvas; Project-Based Learning; project management; meaningful learning.

1. Introduction

In the last two decades, the world has undergone changes in all sectors, namely in politics, economy, health, culture and education. Therefore, the discussion on the development of basic competencies and skills that help students improve their ability to continue learning grows not only in the work market, but also in the education sector.

This is due to the process of globalization and the speeding of information and communication, made possible by digital technologies, which increasingly require an education in which everyone learns to "to know, to build their life projects and to live with others" (MORAN, 2015, p. 15). However, students often claim that classes are "demotivating"; teachers also complain of their pupils' passive attitude. In face of with this new reality, curriculum organization, as well as methodologies, times and spaces, need to be reviewed.

In addition, the pandemic caused by the highly contagious COVID-19 has greatly impacted schools, which, alongside their teachers, had to change their modes of operation with a view to continuing their pedagogical work by their students.

In this sense, the importance of improving and expanding the combined use of innovative methodologies and digital technologies can positively impact student learning in distance and remote education (PAIM, 2016).

It is possible, for example, to employ the Project-Based Learning (PBL) Method remotely. However, this method is riddled with doubts, and teachers are unsure as to how to conduct it (BENDER, 2014). Faced with this difficulty, it is suggested the use of accessory project creation and management methods, either in face-to-face or distance learning, such as Project Model Canvas (PMC) (FINOCCHIO JUNIOR, 2013)
In this context, we aim to answer the following central question: How can PMC, a project-management tool, contribute to the PBL Method in face-to-face and/or remote education?
With the above starting points in mind, the present research has the following objectives: to contribute to the face-to-face and/or remote use of the PBL Method with the help of PMC; to become acquainted with PMC, as one of the existing Project Management methods; to understand the PML Method's relevance to face-to-face or remote education.
Methodologically, we opted for a qualitative approach (MINAYO, 2012) in order to conduct a review of literature (LIBÂNEO, 1990; FAGUNDES, 1999; PEPERT 1997; GIL 2008; SALDANHA, 2013; CIRILO, LEÃO and PORTO 2017, CARBONELL, 2017). In addition to these authors, in order meet our objectives, we conducted a survey on the digital platforms *Scientific Electronic Library Online* (sciELO) and *Google Scholar*, in search for papers in the area of Education addressing PMC and PBL, specifically between 2013 and 2019.
This allowed us to understand how a project management tool such as PMC can contribute to the PBL Method in face-to-face or remote education, and thus provide the development of the ideas and skills so necessary for the twenty-first century, namely: criticality, creativity, collaborativity, citizenship, character and communicability (PAIM, 2016).
After having introduced the issue at hand and our objectives in the above, in section 2, the methodology adopted is outlined; sections 3 and 4 discuss PBL and PMC, respectively, as well as the latter's contributions to project management and applicability in face-to-face and/or remote education. Then, in section 5, we present our findings concerning PMC's applicability to PBL, and, in section 6, our final remarks.

2. Methodology

This study follows a qualitative approach (MINAYO**,** 2012), and conducts a review of literature, the principle of which is to gather, organize, and systematize publications in journals, books, among others; after the data has been collected, it is possible to undertake a critical-reflective evaluation.
According to Gil (2008), a review of literature that dives deep into its theme and with an ethical, moral, social and political commitment allows researchers to obtain a panoramic view on the subject under investigation, as this type of study allows us to know what the authors published on PBL, PMC and their contributions to education.
To this end, we first conducted a survey of papers published on the digital platforms *SciELO* and *Google Scholar*, using the keywords "Project Model Canvas (PMC)" and "Project-Based Learning (PBL)", specifically between 2012 and 2020, in Education journals.

In total, we found 04 papers on the theme. This number was reached after a selection, in which titles, abstracts, keywords and final remarks were checked. We understand that this was necessary, as some papers' titles, for example, were not in line with our objectives in this research.

3 Project-Based Learning: some theoretical considerations

PBL is a project-based learning method. One of its premises is the importance of students' prior knowledge. Fagundes, Sato and Maçada (1999, p. 5) explain that "learning by projects" refers necessarily to the formulation of questions by the author of the project and by the subject who will build knowledge. The authors claim that we start from the principle that the student is never a "tabula rasa", that is, they were capable of thinking before. It is from their previous knowledge that learners will move, interact with the unknown, or with new situations, to appropriate specific knowledge – whether in science, arts, traditional culture or culture in transformation.

Men and women, throughout their existence, have always had the need to create projects, whether on a personal, family, professional or social level, among others. Therefore, it can be stated that the undertaking of projects is inherent to the human being. Creating a project is equivalent to drawing up a plan to make a certain dream come true. However, most of the time, people are not known to systematize their dreams, especially their personal projects.

In this scenario, from a systematized perspective, we will present PBL, which is an innovative method in education that provides numerous strategies that are beneficial to students' learning process. According to Cyril, Leão and Porto (2017), the term was coined in Canada, in 1960, at McMaster University, specifically in the School of Medicine.

With PBL, students learn to be autonomous thinking agents, and become creators of their own paths in the learning process, developing it in groups to conduct research, creating projects that reflect their knowledge through problems or questions posed by teachers in order to instigate and stimulate them to find solutions. However, students participate in the entire decision-making process. Saldanha (2013, p. 5) states that, in developing PBL, the pedagogical strategy is to present students with situations that are meaningful and contextualized in their reality, identifying problems and seeking solutions to solve them; for Saldanha, students and teachers cooperate, and share authorship.

In this sense, according to the author, the work plan is taken jointly among teachers and students. That is, in the PBL Method, students become partners of their teachers, thus characterizing a heterarchical relationship, in which these subjects are builders of knowledge. The choice of the theme is based on the concerns, questions, doubts and uncertainties of those involved in the process that take into account the context in which the students are inserted.

In this perspective, according to Papert (1997), in PBL, unlike traditional teaching, the teacher's role is that of mediator, advisor, facilitator and collaborator. That is, teachers open ways for students' discoveries as political and social subjects, who take part in society and in their own learning processes. According to the same author, in this method, students are able to build new knowledge at any time and situation of their lives.

Similarly, Libâneo (1990) understands that the teacher needs to propose students new challenges and promote, for them, opportunities to create and discover new learning and new projects. In order to do so, it is necessary to promote uninterrupted, unfragmented work, and, above all, take students' prior knowledge into account

PBL is relevant in present times, as it points to the construction of integrated knowledge, made possible by more innovative approaches that better meet the social, cultural and educational demands of the Twenty-First Century.

According to the Brazilian Curricular Guidelines (DCNs) for Basic Education, the school needs to be reinvented; it must be capable of producing inventive, participatory, cooperative subjects, prepared for insertion in diverse social, political, cultural and work environments, while capable of intervening in and problematizing ways of production and living (Brazil, 2013, p.16).

In this sense, Carbornell (2016, p.201) points that the educational perspective of work projects is a new integral conception of education, and a way of thinking and being in school that breaks with plastered curricula and with the obsession for result-driven activities. Learning focuses on the construction of significant knowledge, consolidated and made possible by projects that stimulate curiosity, dialogue, cooperation, among other cognitive and socio-emotional skills, envisioning the integral formation of the subject.

According to the Buck Institute for Education (BIE), PBL helps students develop problem-solving skills needed today, and it defines PBL as a systematic method of teaching that involves students in acquiring knowledge and skills through an extensive research process, structured around complex and authentic issues and carefully planned products and tasks. This definition covers a spectrum ranging from brief one or two-week projects based on a single subject in the classroom, to interdisciplinary projects throughout the school year, and involving community and adult participation outside the school (BIE, 2008, p.18).

For this reason, it is possible that individual or group works reach varied findings and considerations, which makes this type of method interesting, since in an exhibition and presentation of works in the classroom or in any other space, for example, information can be changed, added or supplemented. After all, this is one of PBL's purposes: integrating and respecting all forms of knowledge, both similar and divergent, as well as instigating the development of skills. Therefore, with this attitude, learning and skills will be developed.

In this sense, based on the contributions brought by the authors mentioned here, PBL is believed to be one of the existing methods in education that can help students learn in face-to-face and/or remote education, especially at a time when the world faces the COVID-19 pandemic, when students need to manage their studies.

4. Project Model Canvas (PMC)

PMC is a useful project management methodology for environments that wish to improve their planning capacity, but that are characterized by innovation, high business dynamics and project simultaneity, to which rigid and plastered solutions do not apply (PROJECT BUILDER, 2013, p. 5).

However, the project management theme is not new, existing since the Cold War (1947-1991), when it was used in military actions and, later, after improvements, was incorporated into large companies. Currently, however, it is accessible to small and medium-sized enterprises.

According to Ferreira and Ota (2019, p. 243), project management can be carried out through the application and integration of 47 processes, strategically grouped into five groups of processes: initiation; planning; execution; monitoring and control, and closure. The authors also state that project management requires, in addition to planning, the need to evaluate whether the product or service allows this form of management.

That said, the Canvas methodology may be considered a visual management model that uses drawings to represent ideas; a project plan and the mental plan one has of it may be sketched, and its links and interrelations are exposed on a large sheet (A1) with post-it notes that are placed in its 13 frames, which, in summary, answer the questions: Why, What, Who, How, When and How Much. These questions are essential, as they "are the ones that define your project. They facilitate understanding, execution, control and evaluation by following an order that helps in the organization of its conception" (PROJECT BUILDER, p. 14), as we can see in the following figure:

Figure 1. Por quê? (Why?), O quê? (What?), Quem? (Who?). Como? (How?), Quando e quanto? (When and How Much?) Source: https://www.gp4us.com.br/project-model-canvas/, accessed Dec. 21, 2020.

Such questions direct the plan. Thus, everyone can contribute collaboratively in its elaboration. However, it is important to emphasize that at least one of the members must have basic knowledge on Project Management (FERREIRA and OTA, 2019).

Another relevant factor regarding Canvas is that PMC contemplates responding to specifications about the project manager (PM) and pitch (MEDEIROS and; SILVA, 2017, *apud* FERREIRA and OTA, 2019, p. 244). Regarding pitch, this is the first part of the Canvas to be filled, and in it you should summarize your project in one sentence.

In order to build the PMC, in addition to the pitch, there are paths to follow, as described below:

> in the **justification** section, the problems the organization is facing, and needs not being met must be outlined; in the **S.M.A.R.T. goals**, the project's goals must be stated so they are Specific, Measurable, Attainable, Realistic and Time-Bound; the **benefits** section specifies what your company will gain after a given project is implemented; the **product** corresponds to the project's final result, which may also be a service; the **requirements**

> define the product or service's quality so that it is of value for the client; under **stakeholders**, all external factors that may affect the project must be identified; under **team**, all those responsible for the project's deliveries must be listed; under **premises**, all suppositions taken as certain are listed; under **delivery groups**, all tangible, measurable and concrete components which will be generated by the project must be specified; under **restrictions**, all limitations to the project must be described; under **risks**, all relevant future and uncertain events are considered; the **timeline** defines when deliveries shall take place; the **costs** section specifies how much will be paid for the project's conclusion. (FERREIRA and OTA, 2019, p. 246.)

The essential path for the elaboration of the PMC is visibly described above. However, it is necessary to emphasize that, in addition to filling in the slots relating to the key concepts, it is necessary to make sure that there is coherence among them, as well as an association between the filled areas. However, it is worth noting that Canvas may also be presented digitally: "with a television or overhead projector, where the Canvas URL may be projected, all members of your team will be able to view the project plan together" (PROJECT BUILDER, 2017, p. 8).

5. Results and discussion: PMC's contributions to PBL

In order for the proposed projects to really provide the integral formation of the student, they must be very well planned and followed so that they produce really significant knowledge.

According to the BIE (2008), PBL contributes to the development of skills. However, the need of good planning so as to achieve the objectives proposed by the project, be it short or long-term, is emphasized.

The project needs to be well planned and supervised through the monitoring of actions, enabling their control and assessment, so that the end product meets the objectives initially outlined.

In this sense, we propose PMC as support for PBL, as one of the latter's shortcomings is actions management. According to Bender (2014) and El Al Franks and Franco (2020, p. 319), the common aspects of project-based learning are: generating students' interest by means of a guiding and highly motivating issue (anchor), making students' experiences meaningful by cooperative work, constant feedback and review, investigating and innovating based on the established driving issue, providing constant room for reflection, a continuous investigative process, public presentation of the results, and active participation of students, giving them 'voice' throughout the course.

Following this line of reasoning, we signal the relevance of establishing significant actions so that projects do not culminate in improvisation and disconnected actions.

Starting from the need for a good monitoring of actions for PBL to succeed, PMC is an innovative possibility for project monitoring and management, as it presents a full view of the entire plan on a single page, facilitating the management of project actions as a whole. In this methodology, therefore, the participants, the subjects involved in the project, fill out a CANVAS placing post-it notes on 13 frames that define: why, what, who, how, when and how much. These questions define the planning of the project to be developed in PBL.

Thus, PMC can contribute to PBL in the sense that this methodology aims to align and continuously monitor work flows in order to ensure the development of project activities, compliance with deadlines and effective delivery of the end product.

This methodology enables the management of actions for the delivery of the product, as one of PBL' shortcomings is actions monitoring, which leads to their delay, and consequently in the non-delivery of a product due to lack of good project management.

In this sense, Canvas prioritizes project management by assigning responsibilities to all those involved, defining the roles of team members and avoiding conflict. To this end, efficient communication between stakeholders is needed, thus avoiding the spread of mistaken ideas and concepts regarding the project's activities and results. Therefore, it is important to establish a periodicity of communication between members stimulating the participation and involvement of all.

Thus, there is a consensus among the authors (BEHRENS, 2014; BENDER, 2014; HERNÁNDEZ and VENTURA, 1998; ZABALA, 2002) that the active participation of students drives them to be responsible for their learning, and to commit to the activities that will be developed at each stage; when they are instigated to seek a real solution to a real problem, motivation tends to increase.

Results show that integrating PMC into PBL would make project planning and management more collaborative and fluid, facilitating the delivery of the end product, thus promoting significant and integral learning of the subjects involved.

6. Final Remarks

The COVID-19 pandemic has profoundly impacted how teaching institutions around the globe organize themselves, how they act, their time management and pedagogical strategies; this invariably entailed modifications or adaptations to teachers' pedagogical work in remote education. The massive use of digital educational technologies (Virtual Learning Environments, softwares for videoconferencing or evaluating, interactive simulators, educational games, among others) have established themselves as essential channels and bridges between teachers and students. However, the use of technology alone does not guarantee quality teaching; it must be effectively allied with educational methodologies that place student at the center of the teaching and learning process. Thus, active methods such as PBL may greatly foster students' meaningful and self-directed knowledge construction, in addition to favoring the development of their cognitive and socio-emotional skills. At the end of this study, it is concluded that PBL may be more effectively implemented and organized, when combined with the PMC, a practical model for the creation and management of short, medium and long-term projects. PMC is, therefore, a powerful accessory technique for materializing clearly measurable results, focused on palpable "deliveries", deeply adaptive to all logic, to operational mechanics, to the principles and teleology of project pedagogy and to PBL itself.

It should be noted that, in the midst of the various complex challenges in remote education, teachers, with their expertise and diverse knowledge and skills, are key elements to ensure the overall quality of teaching, and to offer a set of possibilities and opportunities for learning experiences through an expanded and improved didactic menu of methodologies and technologies.

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